

Amendments to the Specification

[0004] Currently, whether cotton is subject to electronic commerce or not, harvested cotton is brought to a cotton gin. The gin processes the cotton, including removing seeds. Near the end of the process, the cotton enters a bale press, where the ginned cotton is compressed into bales. Each bale of cotton has dimensions of approximately 2 x 3 x 5 feet (60 x 90 x 150 cm), and a net weight of approximately 480 pounds (220 kg). Each bale is tagged with a Permanent Bale Identification ~~permanent bale~~ identification (PBI) number, employing bar code technology, and then transported to a warehouse, or other storage facility.

[0006] Thus, at the gin's bale press or, in some cases, at an on-site or off-site warehouse, samples are cut from two sides of each bale and are sent to a classing office (actually, a laboratory) to measure the fiber quality for purposes mentioned just above. These samples are referred to herein as bale classing samples. In the United States, the quality of a producer's cotton is determined by the U.S. Department of Agriculture Agricultural Marketing Service (USDA AMS). The USDA classing offices employ High Volume Instruments (HVIs) to measure the fiber qualities known as Micronaire, Length, Strength and Color. Human classer "measurements" are typically employed for the fiber quality known as Trash. In the United States, there are approximately eleven USDA classing offices, to which about 17,000,000 bale samples are sent for classing each year.

[0012] In one exemplary embodiment, a computer-implemented system for building a database of data describing individual bales of cotton available for sale includes a database storage device connected to a communications network for storing a database of bale identifications and associated fiber quality data, and a fiber quality measurement instrument located at a bale press in a cotton gin for providing fiber quality data on bale classing samples cut from individual bales

substantially concurrently with the making up of cotton into individual bales. The fiber quality measurement instrument is connected to the communications network for uploading fiber quality data to the database storage device.

[0013] A related computer-implemented system for electronic commerce of bales of cotton comprises a database storage device connected to a communications network for storing the database of data describing individual bales of cotton, in particular, bale identifications and associated fiber quality data, as well as a fiber quality measurement instrument located at a bale press in a cotton gin for providing fiber quality data on bale classing samples cut from individual bales substantially concurrently with the making up of cotton into individual bales. Again, the fiber quality measurement instrument is connected to the communications network for uploading fiber quality data to the database storage device. The system for electronic commerce additionally includes a search engine connected via the communications network to interrogate the database to select bales having fiber qualities within specified ranges for a candidate buyer.

[0014] A corresponding computer-implemented method for building a database of bales of cotton available for sale comprises the steps of employing a fiber quality measurement instrument located at a bale press in a cotton gin to provide fiber quality data on bale classing samples cut from individual bales substantially concurrently with the making up of cotton into individual bales, and then transmitting the fiber quality data via a communications network to a database storage device that stores the database of bale identifications and associated fiber quality data.

[0015] A corresponding computer-implemented method for electronic commerce of bales of cotton comprises the steps of employing a fiber quality measurement instrument located at a bale press in a cotton gin to provide fiber quality data on bale classing samples cut from individual bales substantially concurrently with the making up of cotton into individual bales,

then transmitting the fiber quality data via a communications network to the database storage device that stores the database of bale identifications and associated fiber quality data, and finally employing the search engine connected via the communications network to interrogate the database to select bales having fiber qualities within specified ranges for the candidate buyer.

[0024] Within each gin facility 22 and 24 is a fiber quality measurement instrument 50. The fiber quality measurement instrument 50 provides fiber quality data substantially concurrently with the making up of cotton into individual bales. The term "substantially concurrently" is intended herein to mean within minutes of the making up of a bale of cotton at the bale press. Thus, ~~for example,~~ conventional bale classing samples are ~~may be~~ cut from the sides of the bale right at the bale press, prior to wrapping the bale, and immediately delivered to the measurement instrument 50 for classing. ~~Alternatively,~~ ~~embodiments of the invention may even measure fiber quality data during the ginning process, or at some other point prior to actually making up the bale.~~ Such measurements may be made with either manual or automatic versions of a particular fiber quality measurement instrument 50 identified below. In some cases, samples may be taken from the bale and fiber quality data measured immediately upon entering the warehouse 26 or 28. A characteristic of embodiments of the invention is immediacy of the classing data, in the gin, such that those data may be "fed forward" to optimize the marketing process. Another benefit of immediately available classing data in the gin is that the ginning process may also be optimized by "feed back" controls.

[0026] One particularly suitable instrument 50 ~~30~~ for this purpose is a stand alone instrument disclosed in our international patent application No. PCT/US 00/25470, published on 22 March 2001 as No. WO 01/20321, titled "Conditioning and Testing Cotton Fiber," and also generally described in the

invited paper F. M. Shofner and C. K. Shofner, "Cotton Classing in the New Millennium," 25th International Cotton Conference, Bremen, Germany, 1-4 March 2000, currently known as "RapidTester." That international patent application No. PCT/US 00/25470 includes disclosure from concurrently-filed U.S. patent application Ser. No. 09/663,502, now U.S. Pat. No. 6,735,327, titled "Color and Trash Measurements by Image Analysis" (printed with the wrong Abstract), which also and more concisely discloses the "RapidTester" machine. "RapidTester" is a robust stand-alone platform, into which multiple fiber quality measurement modules are placed. The "RapidTester" instrument measures fiber qualities of cotton samples to produce multiple data products, including images, and additionally internally and ultra-rapidly conditions the samples so that fiber quality testing can be performed at so-called "Standard Conditions," in particular at 70° F (21° C) and 65% relative humidity.

[0028] In addition to fiber quality data as determined by the measurement instrument 50 based on bale samples, ginning process parameters such as critical temperatures, process throughput, number and type of seed cotton and lint cleaners, critical seed cotton and lint moisture contents, and other parameters determined to be relevant, are measured by other instruments collectively designated 66. The instruments 66 are connected bidirectionally to the gin internal data network 52 so that ginning process parameter measurements determined by the instruments 66 are communicated to the gin internal data network 52, as indicated by bidirectional communications lines 58. The ginning process parameter measurements determined by the instruments 66 are time-stamped for correlation with time-stamped fiber quality data and the Permanent Bale Identification (PBI) number of each individual bale. Thus, for each bale, associated data includes both the fiber quality measurements determined by instrument 50 and the ginning process parameter measurements relevant to the processing of the cotton in the particular bale

as determined by the instruments 66, with both sets of data relating to the time stamped moment or interval of production.

[0029] Also shown in FIG. 1, generally as a second element, is a database storage device 70, which stores a database 72 of bale identifications, for example Permanent Bale Identifications ~~permanent bale identifications~~ (PBIs), and associated fiber quality and ginning process parameter data, both time-stamped. The fiber quality data may include the currently-accepted qualities of Micronaire, Length, Strength, Color and Trash. Data representing additional fiber qualities may also be included such as, by way of example, moisture content, nep content, maturity, fineness and stickiness, as well as images. Ginning process data may include critical temperatures, process throughput, number and type of seed cotton and lint cleaners, and critical seed cotton and lint moisture contents.

[0030] Generally as a third element in the system of FIG. 1, as end users of cotton, are individual mills 80 and 82 which utilize the cotton to produce yarn then fabric. Associated with each mill ~~of the mills 80 and 82~~ 50 is a search engine / action engine 84, described in greater detail hereinbelow.

[0040] The search engine 84 then accesses the database 72 and pulls out all relevant bales that meet the criteria. The fourth page (FIG. 5) is then presented. FIG. 5 is a grid of the Permanent Bale Identifications ~~permanent bale identifications~~ (PBIs), micronaire, length, strength, etc. listing all the relevant fiber properties that match those criteria. The user can click on either one on top, for example, Micronaire (mic), and the software orders it from the lowest to the highest. The same function applies to length as well as other properties. The bales are listed from the lowest length to the highest length. The user can keep on scanning through by selecting "next", which pulls up every bale that meets the criteria. There may be one, there may be 2,000. It's whatever the database 72 has in it.